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| HAUGLAND, SCOTT J | |
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**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Application Number: 10/717,019
Filing Date: November 19, 2003
Appellant(s): ST. GERMAIN ET AL.

Talivaldis Cepuritis
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed September 13, 2006 appealing from the Office action mailed December 29, 2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

| | | |
|---|---|---|
| 6,547,707 | COAT | 4-2003 |
| 5,659,229 | RAJALA | 8-1997 |

6,024,319 KAWABATA et al 2-2000

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 10, 11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cote (U.S. Pat. No. 6,547,707) in view of Rajala (U.S. Pat. No. 5,659,229).

Cote discloses a web tensioning device comprising: a base (frame associated with axis 15), a dancer arm 14 having a free end portion with a dancer rotatably mounted on it, a servo motor 17 for pivotally positioning the dancer arm by applying a torque, and a controller (Fig. 2) for the servo motor.

Cote does not disclose that the torque applied by the servo motor is substantially the same as the force of the dancer arm acceleration or that it is increased or reduced by this force.

Rajala teaches controlling a dancer roll so as to compensate for the effects of acceleration of the dancer roll by detecting the magnitude of the acceleration and applying a torque that is increased or reduced over that required in absence of acceleration of the dancer roll by an amount substantially the same as the force corresponding to the dancer roll acceleration.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Cote with an angular position sensor to detect the acceleration of the dancer roll and to apply a torque adjusted by an amount substantially the same as the force corresponding to the dancer roll acceleration as taught by Rajala

to improve control over the web tension. The sensor used to determine the position of the dancer roll of Cote is necessarily an angular position sensor since the position of the dancer roll determines its angular position.

With regard to claim 11, any position sensor including that taught by Rajala is seen to be an encoder. The sensor is necessarily associated with the fixed end portion of the dancer arm.

With regard to claim 13, Cote discloses using an electric motor (col. 3, line 33).

With regard to claim 14, it would have been obvious to use a limited angle electric motor to drive the dancer arm of Cote due to the limited range of movement of the dancer arm.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cote (U.S. Pat. No. 6,547,707) in view of Rajala (U.S. Pat. No. 5,659,229) as applied to claims 10 and 11 above, and further in view of Kawabata et al (U.S. Pat. No. 6,024,319).

Cote does not disclose an incremental rotary optical encoder.

Kawabata et al teaches using an optical sensor to detect the angular position of a dancer arm in a web feeding apparatus.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Cote with an optical angular position sensor as taught by Kawabata et al to detect position and acceleration of the dancer roll as taught by Kawabata et al to reduce the number of moving parts in the apparatus and, thereby,

improve reliability. The optical sensor taught by Kawabata et al is seen to be an incremental rotary optical encoder since it is capable of detecting angular increments of rotary motion of the dancer arm.

**(10) Response to Argument**

Appellants argue that Rajala does not teach control of a dancer roll so as to compensate for the effects of acceleration of the dancer roll by applying a torque to the dancer arm. However, Rajala teaches compensating for the effect of acceleration of a dancer roll (that is supported differently than the dancer roll in Cote) on the tension imparted to web by the dancer roll. As would be apparent to an ordinary artisan, any moving dancer roll would apply forces to web guided by it that depend on the acceleration of the roll. Rajala teaches compensating for these forces by applying a balancing force to provide finer tension control in the web. It would have been obvious to determine acceleration of the dancer roll 11 in Cote and apply a balancing force to refine the control of web tension in Cote. It would have been apparent to an ordinary artisan that the structure disclosed by Cote could not provide the degree of control of tension that is provided by the acceleration-compensated system of Rajala. The Cote apparatus clearly would have had a deficiency, which would have been apparent when considered in light of Rajala. Rajala teaches how to remedy this deficiency. Note that Rajala specifically discloses using the acceleration of the dancer roll in generating web tension control commands (col. 10, lines 21-29; Fig. 4). Rajala discloses sensors 58, 60 (Fig. 2) for measuring movement of the dancer roll. Dancer roll acceleration is accounted for by the (Vp*-Vp) term in step 3 of Fig.3 and in the equation for $T^*_{dancer}$ in

col. 9, line 17. The process by which Rajala monitors and controls web tension which Appellants refer to as "incremental" does not negate the teachings of Rajala or distinguish over Appellants' apparatus. Any conventional computer-based control system necessarily operates on an "incremental" basis, i.e., inputs are processed and outputs are adjusted only at (short) finite time intervals.

Appellants argue that Rajala does not show or suggest an angular position sensor, that replacement of the piston/cylinder assembly of Cote with the web tension sensors described by Rajala would result in an inoperable device, and that the mechanisms shown by Cote and Rajala are not interchangeable. However, Rajala teaches measuring dancer roll position. A position measuring mechanism similar to that in Rajala (including 48, 56, 58; Fig. 2) could be adapted to measure the position of the dancer arm 14 in Cote, motor 56 and sensors 58, 60 of Rajala could be connected directly to arm 14 in Cote, or other obvious structures could be used. There is no requirement in the teachings of Rajala that the piston/cylinder of Cote be replaced, but Cote discloses that an electric drive may be used (col. 3, lines 32-33). Rajala states that the disclosed dancer system can be used with any dancer roll (col. 12, lines 20-22). Adaptation of the control system of Rajala to a dancer roll mounted on a dancer arm as in Cote would have been well within the level of skill of an ordinary artisan. It is noted that, contrary to Appellants' assertion, the Examiner does not contend that Cote discloses an angular sensor used to determined the position of the dancer roll. Page 3, line 20 - page 3, line 1 of the final rejection refers to the apparatus of Cote as modified by Rajala. It is, also, noted that the compensating force or torque applied to the

modified dancer roll of Cote is now clearly the same as the claimed compensating torque since the claims have been amended to overcome the indefiniteness rejection under 35 U.S.C. 112, second paragraph.

Appellants argue that neither Cote or Rajala disclose the particular type of encoder recited in claim 11. However, claim 11 requires an encoder that senses relative angular displacement of the dancer arm. Rajala teaches sensing dancer roll position. Adding any sensor that detects the position of the dancer roll in Cote, also, necessarily, detects its relative angular position since the roll is mounted at a fixed distance from the pivot axis of the dancer arm. Rajala, also, teaches the use of an angular position sensor 58.

Appellants argue that the references do not suggest a limited angle electric motor as recited in claim 14. However, Cote suggests the use of an electric motor as does Rajala for positioning a dancer roll. Both of these motors would rotate only through limited angles due to the limited working ranges of the dancer rolls in Cote and Rajala. Use of any other limited angle servo motor would have been obvious for this reason.

Appellants argue that none of the reference teach an incremental rotary optical encoder and that Kawabata et al discloses a distance sensor, not an optical sensor. However, 52 of Kawabata et al is a photoelectric sensor (col. 4, line 15). The sensor detects angle (col. 4, lines 20-23). The sensor detects increments of rotary motion of arm 4. Thus, Kawabata et al discloses an incremental rotary optical encoder. Appellants' lack of claimed and disclosed detail does not distinguish over the more detailed disclosure of Kawabata et al.

Appellants argue that Kawabata et al is not combinable with Cote and Rajala because it uses a different tension adjustment method. However, Kawabata et al is combinable to meet the claimed limitations since it is related to tension control and dancer roll detection and it teaches a particular type of dancer roll position detector that may be used in such a device. Replacement of the pressure transducer 19 of Cote with the optical position detector of Kawabata et al has not been suggested by the Examiner. They serve different purposes.

Appellants argue that the invention is unobvious from the references since all of the references monitor and use web tension for adjustment. However, neither Appellants' claims or disclosure exclude the use of Appellants' apparatus in combination with tension sensing means. In use, the dancer roll of Appellants' apparatus would exceed the limits of its range of motion if web input or output speed or web tension is not adjusted. Adjustment could, for example, be in response to web tension or dancer movement.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

sjh
11/20/06

Conferees:

Meredith Petravick

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PRIMARY EXAMINER